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### **A New Technology Births a New Science - Thermistry**

With seven years experience and now an issued patent, USP 7,631,506, on the discovery that Liquid Nitrogen, when rained through a perforated pan or trough produces pure, inert, cryogenically cold Nitrogen gas which opens a world of capabilities from ending fires and crises to extracting fuel and polluting compounds from the earth. It is; Green, mean and clean since Nitrogen is already 78% of the atmosphere, it not only is available everywhere and mixes back in with no mess, no damage, no change. A fire burning flooded with pure Nitrogen just isn't burning any more.

The new science, Thermistry, is the study of or related to using temperature difference to drive change or motion using an inert material - here Nitrogen, N<sub>2</sub>, molecules - the fourth coldest liquid in the world - creating action without chemical reaction. Chemical reaction is prevented both by having reactive materials surrounded by inert Nitrogen gas which eliminates the reactive Oxygen and even Hydrogen from interacting, and, second, by taking the ambient temperature of the materials below their temperature window of reaction.

Thermal events include atmospheric weather and all its ramifications, hot air heating, and air conditioning. All these deal with the 78% Nitrogen air mass, and, until lightning occurs it avoids other sciences - even to include clouds and tornados, hurricane systems, and hail storms.

Thermal techniques start cryogenically using Liquid Nitrogen rained through a spaced-hole sieve descend in drops through warmer air causing the drops to evaporate into pure Nitrogen gas. Nitrogen's wrapped-tight molecule prefers to neighbor itself and in the evaporation process will force other air components out of the cloud of Nitrogen giving pure Nitrogen gas, an inert gas cloud at cryogenic temperature. On evaporating the Liquid Nitrogen drops in a calm environment, one can see the size of the pure gas cloud because its rim is clouded with condensed water vapor. A burning match placed in the clear air stops burning.

Factors included in Thermistry using Liquid Nitrogen sourced Nitrogen gas:

1. transferring temperature. It will cool things down rapidly, passing the cryogenic Nitrogen gas through pipes, it freeze things. It also will solidify spilled liquids for easy pick up and even gaseous toxins keeping them in the canister or aerosol they are in preventing their dissemination. Used in oil shale extraction, the cold will crack the kerogen that contains the fuel components. Working with unexploded ordnance, the freezing will prevent able power function and then at lower temperature, prevent the chemical reaction that causes the explosion. In controlling coal mine fires, it counters the inferno in the surface burns and rapidly reduces the

underground temperature that would re-ignite methane gas and coal burning. To cool the last Chinese coal mine fire, it took three years. Of late, it will prevent meltdown of fuel rods in nuclear reactors and freeze radioactive contaminated water into ice for transport to arctic regions.

2. enabling Oxygen-free transport of flammable materials as fuels and reactive mixtures. Extracting fuel with Nitrogen as the carrier of the fuel to the surface, one can reach the needed 375°C. temperature to carry all the heating oil and nothing will burn. It is offered to cool down the Fukushima Nuclear facility fuel rods to prevent meltdown. They report temperatures of 322°C in the reactors and spent fuel rod storage, but that is below our heating oil extraction temperature and way above water boiling so as to insure a dry environment which brings danger of Oxidizing the fuel rod chemicals.
3. ending fuel fires by bathing the burn in Nitrogen gas evaporated from Liquid Nitrogen relates to energy safety from coal mines and petroleum facilities to chemical plants and even particle fires as lint, dust in silos and shipboard with grain shipments, sugar production and the like.
4. freezing the containment of fuels as in oil shale and landfill seams where stored water freezes expanding its 10% microscopically fracturing the material containing the fuel components which allows release of contained fuels upon heating later in the process. In the fuel extraction, the locked in fuels in sedimentary situations is opened by the expanding water in the materials. With oil shale it let heating the rock after Liquid Nitrogen / cryogenic Nitrogen treating give off light, sweet fuels and water and then, as the heating continued, the gasoline, kerosene and heating oil. Without the Nitrogen treatment, it gave off sulfur compounds.
5. saturating the ground, the Nitrogen eliminates the Oxygen so high temperature extraction can be done without ignition of the fuel bringing even Methane safely to the surface and capturing it by condensation, and providing means to end subterranean coal mine, peat and other embedded fires. This again is for fuel extraction and coal mine fire control as well as other embedded fires that burn long now since, other than this new Nitrogen technology, there is no means to end them.
6. carrying particles and molecules emerging from fires and other releases sometimes around the world - pumice from St. Helen's volcano in Washington state dropped on my car in Boulder, Colorado to the depth of about 1/16th of an inch. Smoke from a wild land fire 125 miles away and 5,000 feet higher than my position closing I-76 because the smoke produced a blinding cloud of smoke. The 78% Nitrogen atmosphere does this.
7. penetrating the ground with Nitrogen gas in the pure state to control embedded fires stop the smoke and toxin releases by cooling the ground to below ignition temperature, and as mentioned in #5, suffocates the burn.

8. flooding the fire draft with Nitrogen, a gaseous fire suppressant, see NFPA Code 2001, ends the burning and counters infernos which pull the Nitrogen cloud into the fire going to whatever level of the structure or of forest the most active burn is happening. The fire brings the fire suppressant to itself ending the burn. In contrast, water and foams drop fall through the fire, and puddle on the ground. Extending this further, when a cloud of Nitrogen is drawn into a fire, it can be pulled into and be effective in ending a series of fires because it stays as a gas and has no chemical change. If it does mix in the fire it is flooded with Carbon dioxide which, as you know, is also a fire extinguishing agent.
9. using the cryogenic temperature of just evaporated Nitrogen in condensing tubes in a coal smoke environment freezes out the water on the walls of the tubes causing soot to drop out of the air. Further cooling can condense Carbon dioxide (CO<sub>2</sub>), into dry ice, or like the Dutch practice, pass CO<sub>2</sub> through greenhouses to enhance plant growth. This gas stack scrubber method eliminates the smoke rather than disseminating it into the air off the top of a tall chimney and applies the smoke components to enhancing plant growth.
10. breathing pure Nitrogen or Argon, Neon or Helium air by man or beast causes fainting, because the level of CO<sub>2</sub> in the lungs ends with no Oxygen exchange. The diaphragm action stops and the brain sleeps inducing fainting. In this state, fires and their smoke do not damage or destroy the lungs of those caught in a fire and, if resuscitated within six minutes, they will survive without mental or physical damage. Also flooding a Methamphetamine Lab situation both controls the occupants and prevents explosions making it safer for first responders. First responders with extra SCUBA equipment must be in the fire area to quickly restrain suspects and resuscitate anyone caught in the fire and walk them out. The non-lethal weapon use also ends hostage situations and robbery attempt at banks or convenience stores or airliner hijackers.
11. realizing this Nitrogen gas is invisible to the eye, unidentifiable to the nose, not tasted by the tongue and silent to the ear – knowledge of its effects and actions to remedy a situation will protect the population in the environment of its use. Using this Nitrogen gas sourced from Liquid Nitrogen was suggested to the US military as a favored means to do urban warfare in Iraq in that both persons and property are protected and undamaged, yet the terrorists can be easily separated and interrogated. They say money is the issue and then choose the most expensive means – drone bombs which are costly as is recovery from the explosion to say nothing of unnecessarily lost lives.
12. fighting fires with Nitrogen leaves no water damage and no electrical arcing making this technology optimal for handling vehicle fires with the ever increasing number of electric and hybrid automobiles on the road mixing with the fossil fuel powered vehicles. It leaves homes which have had fires more quickly recoverable since only what burned away,

- warped, melted, or was scorched needs replacing. It still smells so bring on the Fabreeze TM.
13. winter fire fighting using Nitrogen does not cause ice build up as using water does, damaging the structure and coating the ground with ice endangering those walking, working and driving in the area.
  14. measuring Nitrogen gas volume from one gallon of Liquid Nitrogen, one gets 230 gallons super cold (30.7 cubic feet) – the volume of a twin bed with mattress; at room temperature, 250 gallons (33.4 cubic feet); and at inferno temperatures, over 600 gallons (80+ cubic feet). A truckload of 3,000 gallons of Liquid Nitrogen floods 92,240 cubic feet with super cold and 100,260 cubic feet with room temperature Nitrogen. It is not consumed in the fire so can end burns over a large tract. When having heated in countering inferno temperatures, it will rise in the atmosphere flooding 240,000 cubic feet of treetop infernos. With a sheering 5 MPH wind, it becomes part of the atmospheric gases being normally 78% Nitrogen. Once polluted considerably, it mixes easily with the air.
  15. determining Nitrogen molecular reactivity with its diatomic structure, it shares three electrons putting its reactivity between Oxygen (O<sub>2</sub>) and diamond structure of Carbon (C<sub>4</sub>). It takes legumes – peas, peanuts, beans of all sorts – to split the Nitrogen atom pairs with their rhizome bacteria. These bacteria create nodules on the roots which when left in the field will fertilize the ground for several years of growing other crops.
  16. preventing flooding by freezing water and gravel in sandbagging and levees and freezing temporary patches in dams and dikes. This was offered to protect the just rebuilt New Orleans against Category #5 hurricane flooding and river flooding using sandbagging for towns threatened in general river flooding. The patches were offered to stop the flow of radioactive water from the Fukushima Nuclear Facility.
  17. reducing pollution, nuclear or toxic, by freezing out the water containing the irritant and transporting it to a place safe to dispose or degrade it. Here again was a solution to a Fukushima difficulty where radioactive water was gushing from a reactor flooded to cool it.

These seventeen factors alone can influence our decisions on fire and crises handling, wild land and coal mine fire control, remediation of organics from the soil and ground to prevent further contamination of aquifers, implement fuel extraction from fossil fuel deposits of all but solid carbon materials – diamond, slate, and anthracite coal, and freezing levee cores, sandbagging and breach repair to prevent flooding. Many problems cannot be handled by current technology except for this cryogenic means and others are poorly or expensively handled, either economically or environmentally as the dispersing detergent to counter the BP Oil Crisis in the Gulf. Using this technology, CryoRain offered to end the flow of crude from the wellstem which would have cut the polluting of the Gulf of Mexico by two months, but someone put as the first reason to reject a

proposal that “Freezing is not Feasible.” Our triple pack offer there was to end the flow from the well, freeze the crude on the surface of the water and freeze the crude on the shores and take collected crude to area refineries to convert to fuel. Chefs on television of late have been pouring Liquid Nitrogen into their mix for the best ice creams....no after taste in Nitrogen. Having Nitrogen in the kitchen can end a kitchen fire is a flash and not destroy the meal(s) in preparation.

Enjoy discovery of applications remembering I have a eight year advantage and an array of patents pending and proposals implementing those I found useful. If the administering scientists in our crises centers would have the courage of great chefs, this technology would have been in the field years ago. Let us work together to get this logical choice for countering fires and crises into use from fire departments to fixed systems like replacing water sprinkler systems to the non-damaging Liquid Nitrogen sourced Nitrogen gas which do not expand the damage beyond that caused by the fire and ending the fire more quickly even reduces the damage the fire might have caused if fought with water, foams or chemicals. Communities should convert their crises fighting to our most abundant gas and save money, property, and, most importantly, lives.

Sincerely,

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CryoRain Inc. is ready to serve:

CCR —6EK36

### Nitrogen Saves Us All

- Fires controlled – house, industrial, oil, wildland fires, and coal mine fires.
- Flood control – strengthens levees, solidifies sandbagging, blocks dam and dike breaches.
- Remediation.pulling organic chemicals from the ground.
- Spill Recovery, water, land and air.
- Toxin release abatement and recovery from air.
- Non-lethal weapon for safe capture and protection of innocents.
- Countering infernos and nuclear meltdowns.
- Fuel extraction – all fuels – from oil shale and landfill seams using only Nitrogen.
- Clean coal – gas stack scrubber eliminates smoke – chimneyless power.

### NAICS CODES

211111 - Crude Petroleum & Natural Gas Extraction  
213113 - Coal mining support Activities **FIXED**  
221113 - Nuclear Electric Power Generation **FIRE**  
221119 - Other electric power Generation **SYSTEM**  
237990 - Other heavy, civil Engineering - FLOODS  
333132 - Oil & Gas Field Machinery and Equip. Mfg  
541330 - Engineering Services.  
541620 - Environmental Consulting Services.  
541712 - R&D in Physical, Engineering & Life Science (except biotechnology).  
562910 - Remediation Services - organic materials  
922160 - Fire Protection  
922190 - Other Justice, Public Order, and Safety Activities  
928110 - National Security.

Issued patent: USP 7,631,506 Many pending by Inventor, Denyse DuBrucq

**Product Service Codes:** AB12, AB24, AC94, G17, AG22, AG57, AH14 AH35, AH53, and AT43.

**Federal Supply Classifications :** 1040, 1230, 1290, 1365, 1385, 1395, 2590, 4210, 4235, and 6116

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